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T O P S E C R E T 100117Z CITE [redacted] 8420 1966 SEP 10 01 51 Z 25X1

PRIORITY [redacted] 25X1

CORONA/PET

SUBJ: MISSION 1036 PHOTOGRAPHIC EVALUATION INTERIM REPORT (PEIR)

REF: A. [redacted] 5043 25X1

B. [redacted] 5093

C. [redacted] 5088

1. NUMERICAL SUMMARY

| | |
|---|---|
| MSN NO AND DATES: | 1036-1 9-16 AUGUST 1966 |
| | 1036-2 16-22 AUGUST 1966 |
| LAUNCH DATE AND TIME: | 9 AUGUST 1966/2046Z |
| VEHICLE NUMBER: | 1631 |
| CAMERA SYSTEM: | J-32 |
| PAN CAMERA NOS: | FORWARD-LOOKING (MASTER) 190 |
| | AFT-LOOKING (SLAVE) 1 1 |
| MSN 1036-1 S/I NO: | D89/110/111 |
| MSN 1036-2 S/I NO: | D88/108/106 |
| RECOVERY REVS: | MSN 1036-1 D-115 |
| | MSN 1036-2 D-212 |

2. CAMERA SETTINGS

| | |
|---|---|
| FORWARD-LOOKING: | 0.200 INCH SLIT, |
| | WRATTEN 23A FILTER |
| AFT-LOOKING: | 0.150 INCH SLIT, |
| | WRATTEN 21 FILTER |

3. PERFORMANCE SUMMARY

A. THE IMAGE QUALITY OF MISSIONS 1036-1 AND 1036-2 IS

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12 SEP 1966

DISTRIBUTION

| Cy No. | Office | Action |
|---|---|---|
| 2 | File | |
| | OS | |
| | ADMIN | |
| | SEC BR | |
| | P & DS | |
| | CCD | |
| | IPD | |
| | PD | |
| | PSD | |
| | PSD-ICB | |
| 2/4 | TID | |
| | IAD | |
| | | |
| | PAG | |
| | DIAXX-4 | |
| | SPAD | |
| | NSA-LO | |
| | DIA-AP | |

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CONSISTENTLY GOOD AND IS BETTER THAN MISSION 1034, AND COMPARABLE TO MISSION 1033.

B. VISUAL COMPARISON OF MIP FRAMES FOR MISSION 1036-1 AND 1036-2 INDICATE THAT AFT CAMERA PHOTOGRAPHY IS SHARPER THAN FORWARD CAMERA PHOTOGRAPHY. THE COMPARISON IS BASED UPON T E EVALUATION OF ON AND DP FILMS. AFT CAMERA IMAGERY IS CONSIDERED BETTER PRIMARILY BECAUSE OF THE REDUCED EFFECT OF HAZE LIGHT IN THE AFT CAMERA PHOTOGRAPHY. IT IS ALSO NOTED THAT THE AFT CAMERA USED A NARROWER SLIT.

C. THE OVERALL IMAGE QUALITY OF MISSION 1036-2 WAS JUDGED TO BE SLIGHTLY BETTER THAN MISSION 1036-1. THIS IS ATTRIBUTED TO THE LOWER HAZE LEVEL IN MISSION 1036-2 AS EVIDENCED BY VIEWING THE INDEX CAMERA PHOTOGRAPHY (SEE SEC 5).

D. NO CORN TARGETS WERE DISPLAYED. ONE FIXED TARGET OF UNKNOWN CONTRAST AND CONDITION WAS RECORDED AT PAHRUMP, NEVADA. THE AVERAGE RESOLUTION FROM THIS TARGET WAS JUDGED TO BE 8.5 FEET ON THE AFT-LOOKING CAMERA PHOTOGRAPHY, AND 12.5 FEET ON THE FWD-LOOKING CAMERA PHOTOGRAPHY. RESOLVING POWER EVALUATION IN THE SCAN AND IMC DIRECTION WAS NOT POSSIBLE DUE TO THE ANGULAR ORIENTATION OF THE TARGET.

4. ANOMALIES

ANOMALIES INCLUDING THOSE REPORTED IN THE "31" MESSAGES (REF A AND B) WERE REVIEWED.

A. LOSS OF START OF PASS MARK ON MASTER CAMERA AFTER PASS D3.

CAUSE: THE START OF PASS LAMP DID NOT OPERATE SUB-SEQUENT TO PASS D39 DUE TO APPARENT LAMP FAILURE. (NOTE: [redacted] SYSTEMS J37, J39, J40 AND MISSION 1033 EXPERIENCED RECENT SOP LAMP FAILURES. REF: PEIR ACTION ITEM 073/1033). 25X1

ACTION: RECOMMEND EVALUATION OF SOP LAMP DRIVE VOLTAGE AND LAMP OPERATING CHARACTERISTICS. (MONITOR- [redacted] 25X1

B. ON BOTH 1036-1 AND 1036-2 MISSIONS THE BASE PLUS FOG DENSITY VALUE OF THE STELLAR RECORDS WERE APPROXIMATELY 0.30 DENSITY UNITS HIGHER THAN ANTICIPATED. PROCESS CONTROL CHECKS AND R-2 SAMPLES FROM THE MISSION FILM DID NOT EXHIBIT THIS DENSITY INCREASE. RADIATION MONITORS INDICATE THAT RADIATION IS NOT A SIGNIFICANT FACTOR. A PROCESS CONTROL CHANGE WILL BE MADE TO COMPENSATE FOR THE DENSITY INCREASE.

CAUSE: EXACT CAUSE IS NOT KNOWN.

ACTION: INVESTIGATIVE WORK TO ESTABLISH PROBABLE CAUSES FOR THIS ANOMALY ARE IN PROGRESS. (MONITOR- [redacted] 25X1 25X1

C. IMAGED INDEX RESEAU EDGE - SIMILAR TO ACTION ITEM 059/1029 BUT OF GREATER DENSITY AND OCCURRENCE.

CAUSE: INSUFFICIENT MASKING OF INDEX CAMERA RESEAU PLATE RESULTED IN EXPOSURE OF SMALL SEGMENTS OF RESEAU EDGE IN CORNERS OF ADJACENT FRAMES THROUGHOUT THE MISSION. DENSITY IS OCCASIONALLY GREAT ENOUGH TO DEGRADE UNDERLYING IMAGERY.

ACTION: EXAMINE CURRENT PROCEDURES AT BOSTON AND

INVESTIGATE POSSIBLE CORRECTIVE MEASURES. (MONITOR- [redacted] 25X1

[redacted] 25X1

D. A MINOR REGION OF SOFT IMAGERY ON THE AFT RECORD, LOCATED AT THE CAMERA NUMBER EDGE SUPPLY END OF THE FORMAT FIRST NOTED ON PASS 203D THROUGH THE END OF THE MISSION. APPROXIMATELY ONE SQUARE INCH OF THE FORMAT WAS AFFECTED.

CAUSE: EXACT CAUSE IS UNKNOWN. THE CONDITION IS POSSIBLY DUE TO IRREGULARITY IN TRACKING TENSION.

ACTION: THE TEAM BELIEVES THAT BECAUSE OF THE MINOR SIGNIFICANCE OF THIS ANOMALY, AND THAT THE REGION AND MAGNITUDE OF THIS SOFT SPOT IS QUITE SIMILAR TO PAST SYSTEM SOFT SPOT HISTORY NO ACTION SHOULD BE INITIATED.

E. INTERMITTENT MINOR SCRATCH-LIKE MINUS DENSITY MARKING LOCATED ON AFT CAMERA MATERIAL 1.22" FROM CAMERA NUMBER EDGE.

CAUSE: CAUSE IS UNKNOWN

ACTION: NONE

F. CHARACTERISTIC ANOMALIES: THERE ARE CERTAIN CHARACTERISTIC ANOMALIES THAT ARE CONSIDERED INHERENT TO T E OPERATION OF THE CORONA SYSTEM. WHILE THESE ITEMS WARRANT ATTENTION TO PREVENT FURTHER DEGRADATION IT IS NOT FELT THAT SPECIFIC ACTION ITEMS SHOULD BE ASSIGNED. A SUMMARY OF THESE ITEMS AND THE DEGREE OF DEGRADATION IS PRESENTED BELOW.

(1) DENDRITIC STATIC DISCHARGE ALONG THE EDGES OF BOTH PAN CAMERA FILMS ARE LESS THAN NORMAL.

(2) NO DENDRITIC STATIC DISCHARGE WAS NOTED ON EITHER STELLAR/INDEX RECORDS.

(3) RAIL SCRATCHES FROM BOTH PAN CAMERAS WAS MORE SEVERE THAN NORMAL.

(4) RAGGED FORMAT EDGES WERE OBSERVED ON BOTH PAN CAMERAS, AND WERE COMPARABLE IN FREQUENCY OF OCCURRENCE AND MAGNITUDE TO PAST SYSTEMS.

(5) SCRATCHES WITHIN THE FORMAT OF BOTH PAN CAMERA SYSTEMS CAUSED BY THE SCAN HEAD ROLLERS ARE CONSIDERED NORMAL.

(6) THE CONTINUOUS PLUS DENSITY MARKING OCCURRING NEAR THE ENDS OF BOTH STELLAR RECORDS IS APPARENTLY A RESULT OF STATIC DISCHARGE AND HAS BEEN OBSERVED ON NUMEROUS PAST SYSTEMS DURING [redacted] TESTING AND FLIGHT. AS THIS ANOMALY IS WELL OUT OF THE STELLAR FORMAT AREA, AND APPARENTLY CAUSES NO MATERIAL DEGRADATION OR SCRATCHING, IT IS RECOMMENDED THAT THIS ITEM BE CLOSED. 25X1

(7) LIGHT LEAKS WERE LESS THAN NORMAL ON BOTH 1036-1 AND 1036-2 MISSIONS. MODIFICATIONS TO MAIN CAMERA LIGHT SEALS HAVE BEEN MADE, EFFECTIVE WITH SYSTEM J-36 AND UP. IT IS RECOMMENDED THAT NO FURTHER ACTION BE TAKEN ON CAMERA LIGHT LEAKS PENDING FLIGHT EXPERIENCE WITH THESE SYSTEMS.

(8) IMAGES OF "JETTISONED FUEL PARTICLES" ARE CONSIDERABLY LESS THAN NORMAL.

5. COMMENTS

A. THE PET INDEX CAMERA PHOTOGRAPHY ANALYSIS IS AS FOLLOWS:

1036-1 - 415 INDEX FRAMES

18 PERCENT OR 75 FRAMES WITH LESS THAN 10 PERCENT CLOUDS, TERRAIN.

1036-2 - 432 INDEX FRAMES

22 PERCENT OR 95 FRAMES WITH LESS THAN 10 PERCENT CLOUDS, TERRAIN.

IN REVIEWING THE INDEX PHOTOGRAPHY IT WAS OBVIOUS THAT THERE WAS A HIGH PERCENTAGE OF PHOTOGRAPHY AFFECTED BY HAZE AND THIN, LOW LEVEL CLOUDS.

B. THE FWD-LOOKING PHOTOGRAPHY OF MISSION 1036-1 AND THE AFT-LOOKING PHOTOGRAPHY OF MISSION 1036-2 WERE PROCESSED ON THE YARDLEIGH FRAME-BY FRAME VISCOUS PROCESSOR. THE REST OF THE MISSION WAS PROCESSED AS NORMAL ON THE TRENTON PROCESSOR. THE ONLY CONCLUSION THAT IS CURRENTLY POSSIBLE IS THAT THERE IS NO OBVIOUS DEGRADATION OR IMPROVEMENT IN IMAGE QUALITY DUE TO YARDLEIGH PROCESSING. AS FAR AS WE CAN SEE THE TWO PROCESSORS PRODUCE COMPARABLE IMAGE QUALITY. PRESENTLY, HOWEVER, THE PET CANNOT MAKE A FIRM RECOMMENDATION AS TO WHICH PROCESSOR SHOULD BE USED IN THE FUTURE ON CORONA PHOTOGRAPHY. THERE ARE OBVIOUS SYSTEM ADVANTAGES AND DISADVANTAGES TO YARDLEIGH PROCESSING. FURTHER, ALL THE DATA REQUIRED TO MAKE AN INTELLIGENT RECOMMENDATION IS NOT YET AVAILABLE. THE PET IS GOING TO PURSUE A DETAILED ANALYSIS OF THE YARDLEIGH AND TRENTON PROCESSED PHOTOGRAPHY FROM THIS MISSION. IN THIS ANALYSIS, IT IS REQUESTED THAT [redacted] INSTRUCT [redacted] TO PERFORM

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A D-MIN, D-MAX ANALYSIS ON EACH FRAME FROM MISSION 1036. THIS INFORMATION SHOULD BE RECORDED BY PASS AND FRAME NUMBER AND TRANSMITTED TO [redacted] FOR FURTHER HANDLING. 25X1

C. THE RAIL SCRATCHING AND RAGGED FORMAT EDGES SHOULD BE IMPROVED ON ALL SYSTEMS AFTER J-36 DUE TO IMPROVED RAIL POLISHING TECHNIQUES AT [redacted] 25X1

D. IMAGERY FROM ALL FOUR HORIZON CAMERAS WAS SHARP AND EQUAL TO THE BEST OBTAINED ON ANY PREVIOUS MISSION, AT NO TIME DID HORIZON PHOTOGRAPHY APPEAR VEILED AS HAS BEEN THE CASE IN MOST PREVIOUS MISSIONS. FOR THE FIRST TIME ALL REFLECTIVE SURFACES IN FRONT OF THE FOUR HORIZON CAMERAS (INCLUDING THE BOOT) WERE DULLED WITH FLAT BLACK PAINT. ON THE PREVIOUS FLIGHT (MISSION 1034), VEIL FREE HORIZON PHOTOGRAPHY WAS ASSOCIATED WITH THE ONE HORIZON CAMERA ON THE SUN SIDE THAT HAD REFLECTIVE SURFACES IN FRONT OF THE LENS DULLED WITH BLACK PAINT. THE OTHER SUN SIDE HORIZON CAMERA WITH NORMAL REFLECTIVE SURFACES IN FRONT OF THE LENS PRODUCED SOME VEILED HORIZON IMAGERY. TO DATE A GOOD CORRELATION EXISTS BETWEEN VEIL FREE HORIZON IMAGERY ON THE SUN SIDE AND NON-REFLECTIVE SURFACES IN FRONT OF THE HORIZON LENS. AS A RESULT OF THE ENCOURAGING RESULTS ACHIEVED IN THIS MISSION, THE PET RECOMMENDS THAT ALL RE-FLECTIVE SURFACES IN FRONT OF ALL HORIZON CAMERAS ON FUTURE SYSTEMS BE RENDERED NON-REFLECTIVE.

T O P S E C R E T

-END OF MESSAGE-